



Fire Protection Training

Procedures Handbook 4300

MOBILE EQUIPMENT

TOPIC: BULLDOZER WINCH OPERATIONS

TIME FRAME: 30 Minutes (00:30:00)

LEVEL OF INSTRUCTION: II

BEHAVIORAL OBJECTIVE:

Condition: A written quiz

Behavior: The student will describe CAL FIRE procedures to unroll and rewind winch cable, describe the hand signals used, and list appropriate safety precautions.

Standard: With a minimum of 80% accuracy

MATERIALS NEEDED:

- CAL FIRE Bulldozer with winch
- Appropriate visual aids
- Audio visual equipment

REFERENCES:

- Winch Manufacturer's Manual
- CDF Video: Basic Bulldozer Safety: 2004

PREPARATION: Winches are found on some CAL FIRE Bulldozers. The winch adds versatility to the Bulldozer. Each CAL FIRE HFEO should be proficient at winch operations.



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BULLDOZER WINCH OPERATIONS

PRESENTATION	APPLICATION
<p>I. PARTS AND TERMINOLOGY</p> <p>A. In Cab</p> <ol style="list-style-type: none">Bulldozer controls<ol style="list-style-type: none">Read and understand the operator's manualUse neutral for all winching operations <p>B. Winch direction selector</p> <ol style="list-style-type: none">Wind cable inWind cable outFree spoolBrake <p>C. Exterior</p> <ol style="list-style-type: none">Cable drumDrum brake<ol style="list-style-type: none">Wooden wedgeWing boltFair leads<ol style="list-style-type: none">Reduces wear on cable when wound in or out under loadCable or wire rope	<p>See Fix-N-Fax #15 for wire rope specifications</p>

4313.11



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<p>II. BASIC OPERATIONS</p> <p>A. Unrolling Cable</p> <ol style="list-style-type: none">1. Free spooling<ol style="list-style-type: none">a. Place transmission in neutralb. Release cable drum locking mechanismc. Pull wire rope or cable out to desired length <p>B. Winding cable out</p> <ol style="list-style-type: none">1. Place transmission in neutral2. Engage position winch direction control device to wind cable out3. Increase throttle to desired speed4. Wind wire rope or winch cable out to desired length <p>C. Winding cable In</p> <ol style="list-style-type: none">1. Place transmission in neutral2. Position winch direction control device to wind cable in3. Increase throttle to desired speed4. Wind wire rope or winch cable in completely5. Place winch direction selection device in neutral position6. Brake on7. Secure hook to tractor	

4313.11



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<p>8. Secure cable drum with locking device, if equipped</p> <p>III. SAFETY PRECAUTIONS</p> <p>A. Do not exceed the rated capacity of the winch</p> <p>B. Replace any cable or wire rope which is worn or frayed</p> <p>C. Do not winch at an angle that will not allow cable to spool properly</p> <p>1. Snatch block may be used to keep pull straight</p> <p>D. Do not winch and drive the vehicle at the same time</p> <p>1. Differing gear ratios cause the vehicle to travel faster than the winch</p> <p>a. The Cable will become loose and the vehicle will drive over it</p> <p>E. The winch will overheat with prolonged use</p> <p>F. Wear full safety PPE when handling the wire rope or cable</p> <p>G. Post an assistant in a position to supervise the Winching Operation in plain view of the bulldozer operator</p> <p>H. If the bulldozer operator loses sight of any assistant, stop the winching operation immediately</p> <p>I. Use standardized hand signals during all winching operations</p> <p>1. When facing vehicle</p> <p>a. Thumb up (take cable in)</p>	<p>Information sheet #1</p>

4313.11



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<ul style="list-style-type: none">b. Thumb down (let cable out)c. Palms of hands forward (stop)d. Right hand thumb pointed right (turn left)e. Left hand thumb pointed left (turn right) <p>J. Do not allow personnel within the bight area of the cable</p> <ul style="list-style-type: none">1. The area inside the winch cables when a snatch block is used <p>K. When unwinding cable, leave a minimum of three to four wraps on the drum to keep the cable secured to the drum</p> <p>L. Paint a yellow 6" stripe on the cable 30" from the drum end to indicate that the drum is nearly empty</p> <p>M. When winding cable in</p> <ul style="list-style-type: none">1. Distribute the cable evenly across the cable drum<ul style="list-style-type: none">a. If the cable is being rewound without a load:<ul style="list-style-type: none">(1) Use one assistant to maintain tension on the cable(2) Use a second assistant to guide the cable on the cable drum<ul style="list-style-type: none">(a) May use a bar or heavy stick to guide cable on the cable drum(b) May pass cable hand over hand to guide it onto the drum	

4313.11



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<ul style="list-style-type: none"><ul style="list-style-type: none">(i) Do not allow the cable to slide through your hands even with gloves onb. If winching another vehicle, the operator of the towed vehicle must steer to the left and right to evenly distribute cable on the cable drumc. If the winch is towing the winching Bulldozer, the operator of the winching Bulldozer must steer left and right to evenly distribute cable on the cable drum <p>IV. INSPECTION AND MAINTENANCE</p> <ul style="list-style-type: none">A. Check all fluid levelsB. Lubricate in accordance with CAL FIRE Policy and/or manufacturer's specificationsC. Inspect oil seals for leaksD. Inspect hooks for cracks or other defects which affect the structural integrity of the hook<ul style="list-style-type: none">1. Do not paint the hook<ul style="list-style-type: none">a. Paint hides defects	

4313.11



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SUMMARY:

The winch is effective at pulling vehicles free that are stuck in sand, mud, etc. and for removing obstacles. If used improperly, the winch can be a deadly device. Only well trained personnel should be allowed to work with and around winches.

EVALUATION:

A written quiz.

ASSIGNMENT:

To be determined by instructor(s).